

Tidal Reservoir Outlet  
East Potomac Park at Washington Channel, at the foot  
of 14th Street, SW  
Washington  
District of Columbia

HAER No. DC-9-B

HAER  
DC,  
WASH,  
574-B-

PHOTOGRAPHS  
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
National Park Service  
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HISTORIC AMERICAN ENGINEERING RECORD

TIDAL RESERVOIR OUTLET

HAER NO. DC-9-B

Location: East Potomac Park at Washington Channel spanning the outlet of the Tidal Basin.

UTM: 18/323650/4305510  
Quad: Washington West, D.C.

Dates of Construction: 1888-1889

Engineer: Major Peter Hains, Army Corps of Engineers

Present Owner: National Capital Park Region  
National Park Service

Significance: Built between 1888 and 1889 as part of the reclamation plan for the Potomac Flats, the Tidal Reservoir Outlet originally operated without accompanying inlet gates to control and regulate water flow from the channel through the reservoir to the river. Its stone masonry arch construction is representative of its functional design and purpose since the tidal gates were fitted into the arch spans. The Tidal Reservoir Outlet was considered an engineering feat because of the dangerous nature of the river bottom at this location. Its function later changed to include a foot traffic crossing over the channel to the flats.

Present Use: Tidal outlet and pedestrian footpath

Historian: Mary Kendall Shipe, 1988

The Tidal Reservoir Outlet is a low-level bridge which is sandwiched today between two other bridges (a Fourteenth Street bridge crossing the outlet and a Fifteenth Street bridge connecting with the Hains Point exit ramp). Constructed in 1889, the total length of the stone masonry structure is ninety-four feet two inches; the height is twenty feet seven inches from the river bottom level of the reservoir. Rough-faced granite of a grey color makes up the exterior of the structure which encompasses the headwall, the voussoirs and the coping (top layer of headwall). The headways (interior walls of arches) are also composed of granite. The Tidal Reservoir Outlet also has two concrete wing walls on each side of the outlet on the channel side and a reinforced concrete deck.

The predominant feature of the outlet is its six arched spans. Each span of the outlet is six feet wide and twelve feet high from river bottom level to the crown of the arch and contains a pair of wooden gates which allows water to flow outward into the channel. The gates are automatically closed by the rising of the high tide. The piers between the arches are three feet nine inches wide and protrude with cutwaters (which protect the piers from scouring) at the base of the arch voussoirs. Two abutments at each end of the outlet are seven feet five inches in width and also have cutwaters at the imposts. The cutwaters have decorative capstones which accentuate the exterior facades of the bridge.

The outlet is an important aspect of the reclamation program of the Potomac flats. In contrast to the Inlet bridge (see HAER-DC-9-A), constructed in 1908, the Tidal Reservoir Outlet was one of the earliest constructed elements of the plan. The necessity for tidal gates at the outlet became obvious because of the large amount of water flowing into the Washington Channel (see HAER-DC-9). After dredging at the location of the tidal reservoir had begun, construction of the outlet gates followed.

The actual construction of the outlet, which occurred from 1888 to 1889, was more difficult than anticipated and required the use of a cofferdam. The river was dangerous at this location on account of tidal action and a soft river bottom. As a result, water seeped through the cofferdam so the construction process was slow. A longitudinal and lateral bracing system to support the cofferdam and a number of foundation pilings seventy-four feet below low tide further strengthened the construction of the outlet. Removal of the cofferdam took place upon completion of the project two years later.<sup>1</sup>

Initially, it was postulated that inlet gates might not be needed, and that outlet gates could control the water level of the reservoir sufficiently. In 1894, Major Peter Hains, Chief Engineer of the project, stated in a report

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<sup>1</sup> Gordon Chappell, Historic Resource Study: East and West Potomac Parks (Denver Service Center, National Park Service, June 1973), pp. 43-51.

that the outlet bridge was operating satisfactorily on its own.<sup>2</sup> Later, it was decided that the construction of the inlet bridge was necessary because of the amount of silt that had built up in the reservoir. The inlet gates working in conjunction with the outlet gates would alleviate the siltage problem.

As the city of Washington continued to develop, the physical setting of the area surrounding the bridge changed. Soon after completion of the outlet gates, the Baltimore and Potomac Railroad Company constructed a railway bridge within 120 feet of the outlet. By the early 1940s, a new high level three span reinforced concrete bridge as well as a low-level bridge connecting to Fifteenth Street were placed within feet from the outlet bridge.<sup>3</sup> By this time, it was evident that a "multiplicity of crossings"<sup>4</sup> over the outlet and channel area obscured the appearance of the outlet bridge, making it look like only a footpath.

Originally, the emphasis of the outlet's use was that of tidal gates; the fact that it could also be utilized for pedestrian traffic seems to have been realized later. A 1906 Washington Star article noted that "someone has made a walk on the upper side with two handrails to protect pedestrians."<sup>5</sup> The article reported that the south side of the bridge had no protection and that more guardrails should be added. The article also claimed that the structure was "never intended as a passageway"<sup>6</sup> but pedestrians utilized it to cross over to the flats. By 1942,<sup>7</sup> sturdier guardrails were in place on the structure, confirming the change in usage. By the middle of the twentieth century, the deck of the bridge was covered with reinforced concrete which insured its use as a pedestrian crossing. Today, the utilization of the structure as a pedestrian path is its most obvious function, and its original and more important role as the primary tidal gate of the Tidal Basin remains unknown to the average passerby.

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<sup>2</sup> Peter Hains, "Reclamation of the Potomac Flats at Washington, D.C.," ASCE Transactions, January 1894, p. 75.

<sup>3</sup> Harry J. Engel, "New Bridges Speed Washington Traffic," Engineering News-Record, 132(29 June 1944), p. 88.

<sup>4</sup> Ibid.

<sup>5</sup> Washington Evening Star, 2 June 1906, p. 2.

<sup>6</sup> ibid.

<sup>7</sup> "Outlet," [photograph], Bridge file, Columbia Historical Society.

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ADDENDUM TO:

TIDAL RESERVOIR, OUTLET

(Tidal Reservoir, Outlet Bridge)

(Tidal Basin, Outlet Bridge)

Spanning the Tidal Reservoir Outlet at 14th Street  
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